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EXAMINER	
CHUKWURAH, NATHANIEL C	

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3721	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/533,873	NOEL, ROGER	
	Examiner	Art Unit	
	NATHANIEL C. CHUKWURAH	3721	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5* is/are allowed.

6)☒ Claim(s) *1-3,6-8 and 14-17* is/are rejected.

7)☒ Claim(s) *9-13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is response to the amendment filed on 6/24/2008.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 6-8 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartiala et al. (US 4,711,090) in view of Balazy et al. (US 2002/0179150).

With regard to claim 1, the patent to Hartiala et al. discloses a method for controlling rock drilling wherein a percussion device belonging to a rock drill machine (2) delivers impact pulses to rock through a tool and wherein the rock drill machine is simultaneously pushed against the rock by means of a feed actuator (1), the method comprising: feeding a pressure medium to the feed actuator (col. 2, line 49) along at least one feed channel as shown in Figure 4; feeding the pressure medium to the percussion device (6) along at least one percussion pressure channel (Fig. 4); determining maximum speed of the feed force considered to be a penetration rate (col. 4, lines 42-43); adjusting at least a percussion pressure on the basis of the penetration rate (col. 3. lines 4-5), conveying at least one pressure medium flow supplied to or from the feed actuator (1) through at least one restrictor (19); and the operation device of 17 of the valve 14, e.g. the surface area affecting the valve spindle and the position of the regulating device 18 of the valve, in a normal drilling situation allows the pressure in the pipe 7 to be as or

only slightly lower than the pressure in the pipe 8 which considered to be adjusting the percussion pressure on the basis of the determined penetration rate (col. 4, lines 44-49) .

Hartiala et al. disclose the claimed method except for sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to determine the penetration rate. Balazy et al. teach restrictor and sensors for determining the pressure of fluid flowing in a flow passage positioned both upstream and downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor. In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

With regard to claim 2, the modified method of Hartiala et al. further comprising as in column 4, lines 50-68 considered to be interpreting that the penetration rate has increased when, due to pressure drops, the pressure after the restrictor is decreased relative to a reference pressure before the restrictor, and decreasing the percussion pressure when the penetration rate increases.

With regard to claim 3, the modified method of Hartiala et al. further comprising as in column 3, lines 64-68and column 4, lines 1-2 considered to be adjusting the percussion pressure in a predetermined manner with respect to the change of the penetration rate.

With regard to claim 6, the patent to Hartiala et al. discloses rock drilling arrangement comprising: a rock drill machine (2) including a percussion device (6) arranged to generate impact pulses to a tool to be connected to the rock drill machine (2); a feed beam (not shown) whereon the rock drill machine (2) has been arranged; a feed actuator (1) enabling the rock drill

machine (2) to be moved in the longitudinal direction of the feed beam; a pressure medium system comprising: at least one pressure source (9); at least one pressure medium channel (Fig. 1) leading to the percussion device (6); at least one feed channel (13) connected to the feed actuator (1); and means (14) for adjusting a percussion pressure, and wherein at least one restrictor (19) is connected to at least one feed channel (13) of the feed actuator (1).

Hartiala et al. disclose means (relief valve 14) for determining the penetration rate on the basis of the sensed pressures before and after the restrictor (19) since penetration rate is considered to be inversely proportional to the pressure of the fluid supplied to the feed motor, and the pressure medium arrangement is arranged to decrease implicitly the percussion pressure when the penetration rate increases.

Hartiala et al. disclose the claimed subject matter except for explicitly means for sensing the pressure active in the feed channel before the restrictor and after the restrictor.

Balazy et al. teach restrictor and sensors for determining the pressure of fluid flowing in a flow passage positioned both upstream and downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor. In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

With regard to claim 7, the modified rock drilling arrangement of Hartiala et al. would include a first sensing channel is connected to a section of the feed channel residing before the restrictor in the direction of flow and a second sensing channel is connected to a section after the

restrictor, the first sensing channel is connected to a first pressure sensor and the second sensing channel is connected to a second pressure sensor as disclosed in Balazy et al., the arrangement further includes at least one control unit (12 Balazy et al.), pressure data obtained from the first pressure sensor and pressure data obtained from the second pressure sensor are arranged to be conveyed to the control unit, the control unit is arranged to monitor (0030 Balazy et al.) would include monitoring modified Hartiala et al.'s penetration rate on the basis of: the pressure data obtained from the pressure sensors, the control unit is provided with a control strategy for adjusting the percussion pressure in a predetermined manner with respect to the penetration rate; and the arrangement includes at least one valve controlled by the control unit for adjusting the percussion pressure.

With regard to claim 8, the arrangement of the modified rock drilling of Hartiala et al., includes a control unit (12 Balazy et al.) which is provided with a control strategy for adjusting a feed pressure in a predetermined manner with respect to the penetration rate, and the arrangement includes at least one valve (14) capable of being controlled by the control unit for adjusting the feed pressure.

With regard to claim 14, the patent to Hartiala et al. discloses rock drilling arrangement comprising: a rock drill machine (2) including a percussion device (6) arranged to generate impact pulses to a tool to be connected to the rock drill machine (2); a feed beam (not shown) whereon the rock drill machine (2) has been arranged; a feed actuator (1) enabling the rock drill machine (2) to be moved in the longitudinal direction of the feed beam; a pressure medium system comprising: at least one pressure source (9); at least one pressure medium channel

(Fig. 1) leading to the percussion device (6); at least one feed channel (13) connected to the feed actuator (1); and means (14) for adjusting a percussion pressure; and at least one adjustment unit (Fig. 4A) for controlling the feed actuator, at least two relief valves (24 Fig. 4) arranged in series in load-sense channel as shown of the adjustment unit.

Hartiala et al. disclose the claimed subject matter except for means for sensing the pressure active in the feed channel before the restrictor and after the restrictor and a control system. Balazy et al. teach restrictor (28), sensors (14,16) and control system (12) for determining the pressure of fluid flowing in a flow passage positioned both upstream and downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor. In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

With regard to claim 15, the restrictor of the modified Hartiala et al is deemed adjustable.

With regard to claim 16, the restrictor is considered to have fixed settings.

With regard to claim 17, the patent to Hartiala et al. discloses rock drilling arrangement comprising: a rock drill machine (2) including a percussion device (6) arranged to generate impact pulses to a tool to be connected to the rock drill machine (2); a feed beam (not shown) whereon the rock drill machine (2) has been arranged; a feed actuator (1) enabling the rock drill machine (2) to be moved in the longitudinal direction of the feed beam; a pressure medium system comprising: at least one pressure source (9); at least one pressure medium channel

(Fig. 1) leading to the percussion device (6); at least one feed channel (13) connected to the feed actuator (1); and means (14) for adjusting a percussion pressure, and wherein at least one restrictor (19) is connected to at least one feed channel (13) of the feed actuator (1).

Hartiala et al. disclose means (relief valve 14) for determining the penetration rate on the basis of the sensed pressures before and after the restrictor (19) since the penetration rate is considered to be inversely proportional to the pressure of the fluid supplied to the feed motor, and the pressure medium arrangement is arranged to decrease implicitly the percussion pressure when the penetration rate increases.

Hartiala et al. disclose the claimed subject matter except for explicitly means for sensing the pressure active in the feed channel before the restrictor and after the restrictor.

Balazy et al. teach restrictor and sensors for determining the pressure of fluid flowing in a flow passage positioned both upstream and downstream of the flow restrictor such that the restrictor provide a desired pressure drop across the flow restrictor.

In view of the teaching of Balazy et al., it would have been obvious to one skilled in the art at the time of the invention to modify the method of Hartiala et al. with sensing the pressure of the pressure medium before the restrictor and after the restrictor in order to provide the desired pressure drop across the flow restrictor of drilling machine.

Claim Rejections - 35 USC § 103

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hartiala et al. (US 4,711,090) in view of Balazy et al. (US 2002/0179150) as applies to claim 1, and further in view of Rajala et al. (US 5,121,802).

With regard to claim 4, the modified method of Hartiala et al. is silent about decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases. Rajala teaches a method including decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases as disclosed in column 3, lines 45-49. In view of the teaching of Rajala, it would have been obvious to one skilled in the art at the time of the invention to provide the method of Hartiala et al. with decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases in order to prevent heat formation.

Allowable Subject Matter

5. Claim 5 is allowed over prior of record.

6. Claims 9-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The method of prior art of record fail to teach or suggest a method for measuring, delivering, determining and adjusting pressure data to the control unit.

Further, the prior art of record fail to teach or suggest the monitoring valve comprising: a body, an elongated slide having a first end and a second end, at least one force element that is arranged to act on the first end of the slide and at least one controllable channel that is arranged to open and close by, the slide has at least one collar, a sleeve having outer rim and the inner rim a first chamber and a second chamber on opposite sides of the sleeve, at least a first pressure at least a second pressure channel.

Response to Arguments

7. Applicant's arguments filed 6/24/2008 have been fully considered but they are not persuasive.

Applicant is arguing on page 13, that Hartiala et al. teaches only to affect the pressure of the feed motor and that Hartiala is totally silent about controlling percussion pressure.

Applicant's argument is not persuasive because Hartiala implicitly shows the method of controlling percussion pressure in rock drill.

Applicant is further arguing, that Hartiala teaches to monitor the rotation resistance for controlling drilling instead of monitoring the penetration rate, as is the case in the present invention.

Applicant's argument is not persuasive because the penetration rate is considered to be inversely proportional to the pressure of the fluid supplied to the feed motor.

Applicant is furthermore arguing, that Hartiala does not teach controlling percussion pressure on the basis of the penetration rate.

Applicant's argument is not persuasive because Hartiala implicitly discloses the controlling of percussion pressure on the basis of the penetration rate as shown in the pressure control line (12), relief valve (14) and the fluid supplied to the feed motor (11).

Applicant is arguing that on page 14, Balazy et al. does not make up for the foregoing deficiencies of Hartiala, that Balazy et al. pertains to providing an accurate desired flow rate of process fluids, particularly gases.

The Examiner contends that the teaching of Balazy et al. was chosen to explicitly show Applicant that it is old and well known to people having ordinary skill in the art to place employ restrictor and sensor to control the fluid flow.

Applicant has not overcome the *prima facie* burden of obviousness. The Examiner has provided sufficient motivation to reject the claim under the references Hartiala and Balazy.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHANIEL C. CHUKWURAH whose telephone number is (571)272-4457. The examiner can normally be reached on M-F 8:00AM-4:30PM.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rinaldi Rada can be reached on (571) 272-4467. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nathaniel C. Chukwurah/
Examiner, Art Unit 3721

/Rinaldi I Rada/
Supervisory Patent Examiner, Art Unit 3721
9/21/2008.